

# Notice of Allowability

Application No.

10/810,784

Examiner

Sylvia R. MacArthur

Applicant(s)

CHEN ET AL.

Art Unit

1763

## -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the response of 11/22/2006.
2. ☒ The allowed claim(s) is/are 1-23, 27 and 28.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All   b) ☐ Some\*   c) ☐ None   of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
  - \* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
  - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
    - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
  - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

### Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08),  
Paper No./Mail Date \_\_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit  
of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☒ Interview Summary (PTO-413),  
Paper No./Mail Date herein.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_

Continuation of Substance of Interview including description of the general nature of what was discussed: The examiner asked the attorney to discuss the prior art documents in comparison with the present invention. Mr. Chan informed her that comparing the prior art Fig. 2 with Fig. 2 and 3 of the present invention results in no teaching or suggestion of a laterally extending first section and lower surface of the angled second section that bound the same chamber of the plurality of chambers as recited in claims 1 and 28. Mr. Chan also discussed that the prior art do not teach or suggest vertical deflection. The examiner agreed with applicant's assertion and was asked to cancel claims 24-26, 29, and 30..

## DETAILED ACTION

### EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Alex Chan on December 8, 2006.

The application has been amended as follows:

2. Claims 24-26, 29, and 30 have been cancelled.

The amendments to claims 20, 22, 27, and 28 are as follows:

20. (Currently amended) the carrier head of claim 19 ~~[[21]]~~, where an angle I is about 45°.

22. (Currently amended) The carrier head of claim 1, wherein ~~A carrier head for chemical-mechanical polishing of a substrate, comprising:~~  
~~a base; and~~  
~~a flexible membrane extending beneath the base to provide a substrate receiving surface and define a plurality of chambers to provide independently adjustable pressures to an associated plurality of regions of the substrate receiving surface;~~ the flexible membrane is configured to undergo vertical deflection to react out force components caused by pressure differential between the chambers to provide a substantially uniform transition between different pressures in adjacent regions.

27. (Currently amended) The carrier head of claim 1 ~~[[25]]~~, wherein a point of attachment of the second section of the flap to the central portion is substantially vertically

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aligned with a midpoint of the first section between a point of attachment of the first section to the base and a point of attachment of the first section to the second section.

28. (Currently amended) A flexible membrane for use with a carrier head of a substrate chemical mechanical polishing apparatus, the membrane comprising:

a central portion with an outer surface providing a substrate receiving surface;  
a perimeter portion for connecting the central portion to a base of the carrier head; and  
at least one flap extending from an inner surface of the central portion, the flap including a laterally extending first section and an angled second extending beneath the first section, wherein an upper surface of the laterally extending first section and a lower surface of the angled second section are configured to bound a same chamber of a the plurality of chambers established upon attaching the flexible membrane to the carrier head.

***Allowable Subject Matter***

3. Claims 1-23,27, and 28 are allowed.

4. The following is an examiner's statement of reasons for allowance: The prior art of record fails to teach or fairly suggest an upper surface of the laterally extending first section and a lower surface of the angled section bound a same chamber of the plurality of chambers as recited in claims 1 and 28. Furthermore, the prior art of record fails to teach or fairly suggest a flexible membrane that is configured to undergo vertical deflection to reach out force components caused by pressure differential between the chambers to provide a substantially uniform transition between different pressures in adjacent regions.


Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

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5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sylvia R. MacArthur whose telephone number is 571-272-1438. The examiner can normally be reached on M-F during the hours of 8:30 a.m. and 5 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571-272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
Sylvia R MacArthur  
Patent Examiner  
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December 11, 2006